

### **REMARKS**

In view of the following remarks, the Examiner is requested to allow claims 1-10, 13-15, 22, and 24-31, the only claims pending and under examination in this application.

#### ***Claim Rejections – 35 U.S.C. § 101***

Claims 1-10, 22, 24-29, and 31 were rejected under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter. This rejection is respectfully traversed.

The Examiner has stated that the present claims “have been found to be a practical application of a judicial exception [to 35 U.S.C. § 101] because they comprise computational steps which attempt to transform matter.” Stated in another way, the Examiner appears to argue that the present claims are an unpatentable mathematical algorithm.

In *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, the Federal Circuit stated “[u]npatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not ‘useful.’ . . . [T]o be patentable an algorithm must be applied in a ‘useful’ way.” 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed. Cir. 1998). The Federal Circuit has further stated that if a process is “useful, concrete and tangible,” it falls within the statutory bounds of 35 U.S.C. § 101. See In *AT & T Corp. v. Excel Communications Inc.*, 172 F.3d 1352, 1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999); see also *State Street Bank*, 149 F.3d at 1373.

With regard to the present claims, the Examiner has acknowledged that these claims are both useful and concrete, however, the Examiner has stated that these claims “do not . . . produce a tangible result.”

In *State Street Bank*, the Federal Circuit’s stated: “we hold that the transformation of data representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation because it produces ‘a useful, concrete and tangible result.’” *Id.* at 1373, 47 USPQ2d at 1601.

Further, in *AT & T*, the court was faced with the patentability of various method claims, including the following exemplary claim:

A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:

generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and

including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.

(Emphasis from opinion). 172 F.3d at 1354, 50 USPQ2d at 1449. Referring to the claims at issue, including the claim quoted above, the Federal Circuit stated “[b]ecause the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101.” 172 F.3d at 1361, 50 USPQ2d at 1454.

Thus, in *State Street Bank*, transforming discrete dollar amounts into a final share price produces a tangible result, and in *AT & T* generating a message record including a PIC indicator produces a tangible result.

Turning to the present claims, Claims 1-10, 24-29 and 31 all provide methods for identifying a sequence of a nucleic acid for use as a substrate surface immobilized probe by determining a full length synthesis probability for each member sequence of a set of a plurality of candidate probe sequences by determining the susceptibility to depurination during synthesis of each probe sequence, and employing these probability measures to identify and select a sequence. Similarly, Claim 22 is an improvement in a method for identifying a sequence of a nucleic acid that is suitable for use as a substrate surface immobilized probe for a target nucleic acid, comprising determining the depurination susceptibility for a plurality of candidate probe sequences for the target nucleic acid. Thus these claims all provide the result of: identifying a sequence of a nucleic acid for use as substrate surface immobilized probe, which is useful for creating substrate surface immobilized probes. Further, this result is no less tangible than either “a final share price momentarily

fixed for recording and reporting purposes,” *State Street Bank*, 149 F.3d at 1373, 47 USPQ2d at 1601, or a message record including a PIC indicator.

Additionally, the Examiner, in the office action dated July 5, 2007, stated “[t]his rejection could be overcome by amendment of the claims to recite that a result of the method is outputted to a display or a memory or another computer on a network, or to a user.” This indicates that to the Examiner, the result produced is not tangible until that result is output to a discrete source. However, it should also be noted that the exemplary claim from *AT&T v. Excel* did not require that the message record generated be output to “a display or a memory or another computer on a network, or to a user” or, in fact, to anywhere else, merely generating the record was sufficient to provide a tangible result. As a result, case law suggest that a requirement such that results be output to a specific source in order to be tangible is misplaced.

The present claims are also readily distinguished from the claims which were ruled non patentable under 35 U.S.C. § 101 in *In re Petrus A.C.M. Nuijten*, 84 USPQ2d 1495 (Fed. Cir. 2007) and *In re Comiskey* 499 F.3d 1365, 84 USPQ2d 1670 (Fed. Cir. 2007).

In *Nuijten*, the sole independent claim at issue claimed:

A signal with imbedded supplemental data, the signal being encoded in accordance with a given encoding process and selected samples of the signal representing the supplemental data, and at least one of the samples preceding the selected samples is different from the sample corresponding to the given encoding process.

84 USPQ2d 1498. The Federal Circuit, examining the patentability of the claims in issue found that “[a] transitory, propagating signal like *Nuijten*’s is not a ‘process, machine, manufacture, or composition of matter,” and thus is not patentable under 35 U.S.C. § 101. 84 USPQ2d at 1503. Given that the present claims are clearly directed to processes, and not a transitory signal, *Nuijten* does not apply to the present claims.

In *Comiskey*, two of the independent claims at issue recited “method[s] for mandatory arbitration resolution” in unilateral and contractual documents. 84 USPQ2d at 1679. In finding these claims unpatentable under 35 U.S.C. § 101, the Federal Circuit stated:

Comiskey's independent claims "claim the mental process of resolving a legal dispute between two parties by the decision of a human arbitrator. They describe in essence "conducting arbitration resolution for [a] contested issue" and "determining an award or a decision for the contested issue" through a predetermined "'mandatory" arbitration system, and thus claim the use of mental processes to resolve a dispute . . . Comiskey's independent claims 1 and 32 seek to patent the use of human intelligence in and of itself. Like the efforts to patent "a novel way of conducting auctions" which *Schrader* found to be directed to an abstract idea itself rather than a statutory category.

84 USPQ2d at 1679-1680. Unlike *Comiskey* and *Schrader* (as cited in *Comiskey*), the present claims are not directed at a "business method," do not attempt to patent the means of practicing a profession, and do not attempt to "patent the use of human intelligence in and of itself."

Applicants therefore assert that the present claims are, in fact, directed to methods which provide "useful, concrete and tangible" results.

Furthermore, with respect to Claim 31, this claim specifies outputting the result to a user. The Examiner acknowledged that if such a step were included in Claim 1, the utility rejection would be withdrawn. As such, it is believed that Claim 31 satisfies the utility requirement.

As such, the present claims are patentable under 35 U.S.C. § 101, and Applicants therefore respectfully request that this rejection be withdrawn.

### ***Claim Rejections – 35 U.S.C. § 103(a)***

Claims 1-10, 13-15, 22, 24-27 and 30-31 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over McGall (USPN 5,843,655) in view of Tomiuk et al. (December 2001) and further in view of Minor et al. (US Pub. Pat. Appn. US 2004/0019466 A1).

With respect to Minor et al. being available as prior art under 35 U.S.C § 103, MPEP § 706.02(l)(1) states:

Effective November 29, 1999, subject matter which was prior art under former 35 U.S.C. 103 via 35 U.S.C. 102 (e) is now disqualified as prior art against the claimed invention if that subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. This change to 35 U.S.C. 103(c) applies to all utility, design and plant patent applications filed on or after November 29, 1999,

including continuing applications filed under 37 CFR 1.53(b), continued prosecution application filed under 37 CFR 1.53(d), and reissues.”

The present application claims priority to October 30, 2003. Minor et al. was not published until January 29, 2004. As such, Minor et al. only qualifies as prior art to the present application under 35 USC §102 (e).

Thus, if the Minor et al. publication and the instant application were owned by the same person or subject to an obligation of assignment to the same person, at the time the instant application was made, the Minor et al. publication is disqualified as prior art under 35 USC §102 (e) and therefore cannot preclude patentability under §103.

This is indeed the case. The invention claimed in the instant patent application was subject to an obligation of assignment to Agilent Technologies. An assignment executed by the inventors was recorded on April 19, 2004 (Reel/Frame 014531/0464).

The Minor et al. patent cited as art was owned by Agilent Technologies at the time the claimed invention in that patent was made, as evidenced by an assignment by the listed inventors to Agilent Technologies, which was executed in August and September of 2003 and recorded on March 10, 2006 (Reel/Frame 017290/0655).

As can be seen in view of these two assignments, the subject matter of the cited Minor et al. publication and the presently claimed invention were, at the time the invention was made, both owned by Agilent or both under an obligation of assignment to Agilent. As such, in accordance with §103(c), the Minor et al. publication shall not preclude patentability under §103.

Therefore, the Minor et al. publication is not available as prior art against the claimed invention of the present application under §102 (e). The claims thus cannot be rejected under § 103 (a) by a combination that relies upon the disclosure of Minor et al.

Turning to the rejections with respect to McGall and Tomiuk, the Patent Office bears the burden of establishing a prima facie case of obviousness under 35 U.S.C. § 103(a). In re Fine, 837 F.2d 1071, 1074 (Fed. Cir. 1988). In order to meet its burden, the Office must first demonstrate that the prior art teaches or suggests all the claimed limitations. See Pharmastem Therapeutics, Inc. v. Viacell, Inc., 491 F.3d

1342, 1360 (Fed. Cir. 2007), “the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so.”

Claims 1-7, and 24-31 all have the element of “determining a full length synthesis probability measure for each member sequence of a set of a plurality of candidate probe sequences.” Further, Claims 13-15 include the element of at least one probe identified according to the method of Claim 1.

McGall nowhere teaches or suggests determining a full length synthesis probability measure for probe sequences. Tomiuk is concerned with probe selection based upon the likelihood of being able to hybridize the target sequence to the probe sequence while minimizing the likelihood of cross-hybridization between non-target sequences and the probe sequence. See “Fragment Selection,” page 333-334. As noted previously, these forms of selection are based on hybridization, rather than synthesis probabilities, and in fact Tomiuk et al. nowhere mention synthesis difficulties for the probe sequences. Since neither Tomiuk et al. nor McGall teach or suggest determining a full length synthesis probability measure they cannot render Claims 1-7, 13-15, and 24-31 obvious.

Claim 22 has the element of “determining depurination susceptibility.” McGall nowhere teaches or suggests determining depurination susceptibility. Tomiuk et al nowhere even mention, let alone teach, anything about depurination and problems with oligonucleotide synthesis. Since neither Tomiuk et al. nor McGall teach or suggest determining depurination susceptibility they cannot render Claim 22 obvious.

For the above-enumerated reasons, withdrawal of this rejection is respectfully requested.

Claims 8-9, and 28-29 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over McGall (USPN 5,843,655) in view of Tomiuk et al. (December 2001) and further in view of Minor et al. (US Pub. Pat. Appn. US 2004/0019466 A1).

As discussed above, the Minor et al. publication is not available as prior art against the claimed invention of the present application under § 103(a) since it only qualifies as art to the present application under §102 (e) as was owned by the

assignee of the present application at the time the invention of the present application was made. The claims thus cannot be rejected under § 103 (a) by a combination that relies upon the disclosure of Minor et al. Thus, withdrawal of this rejection is respectfully requested.

**CONCLUSION**

Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Bret Field at (650) 327-3400.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078, order number 10030416-1.

Respectfully submitted,

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